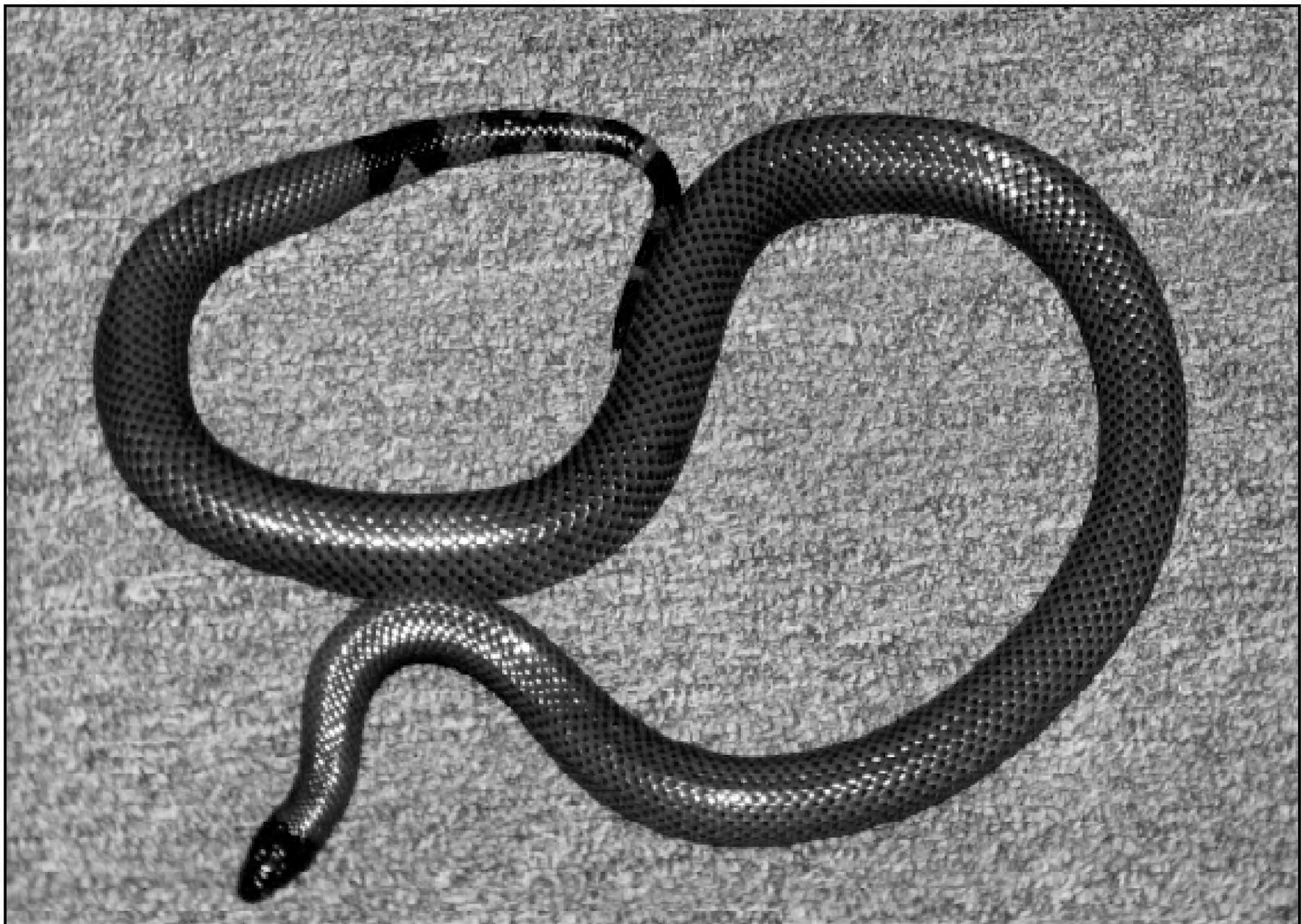


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BULLETIN OF THE CHICAGO HERPETOLOGICAL SOCIETY

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Cover: A unicolor Blanchard's milksnake, *Lampropeltis triangulum blanchardi*, from the vicinity of Cancun, Mexico. Photograph by Noel Alt.

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Size and Demographic Structure of an Isolated Population of Western Hognose Snakes, *Heterodon nasicus*, in Northwestern Illinois

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Introduction

The distribution of the western hognose snake, *Heterodon nasicus*, extends from southern Canada through the Great Plains of the U.S. into Mexico (Conant and Collins, 1991). Several isolated populations exist to the east of the contiguous range in Missouri, Iowa, Minnesota, and Illinois, and to the west in Wyoming and Colorado. Relict eastern populations are holdovers in xeric habitats from a post-Pleistocene period of high temperatures and aridity (Smith, 1957). Little is known about the isolated populations (e.g., Roth et al., 1989), and only a few studies of populations within the contiguous range exist (Platt, 1969; Pendlebury, 1976). Populations in Illinois are located in sand prairies or sandy areas along the Mississippi, Green and Illinois Rivers (Smith, 1961).

The purpose of this study is to estimate the population size and evaluate the demographic structure of a western hognose snake (Figures 1 and 2) population in northwestern Illinois. The western hognose snake is a threatened species in Illinois (see Redmer and Kruse, 1998), and any information on the status of populations within the state is valuable.

Materials and Methods

The field site is an approximately 0.233 km² segment of relictual sand prairie on the eastern bank of the Mississippi River in Carroll and Whiteside Counties, Illinois. The area is administered by the U.S. Army Corps of Engineers and the U.S. Fish and Wildlife Service. The field site represents only a portion of the total area of suitable habitat available for hognose snakes in the area. Dominant vegetation includes

Opuntia humifusa, *Stypa* sp., and *Rhus aromatica*. Ground cover is heterogeneous with a mixture of grassy areas and sand blowouts (i.e., areas of exposed sand with little vegetation; see Figure 2 in Warner, 1998).

Daily transects were conducted in sand prairie habitat from 0700–1100 h from 26 May to 3 July 1996–1998. Snakes were captured by hand, weighed to the nearest gram, snout–vent length (SVL) was measured to the nearest millimeter, ventral scale clips were taken for tissue samples, and snakes were sexed with a probe when possible (some juveniles were too small). Additionally, a passive integrated transponder (PIT) tag was inserted into each snake for future identification. Total person-hours spent conducting transects was approximately 300 hours in 1996, 340 hours in 1997, and 207 hours in 1998. More precipitation in 1998 resulted in fewer hours in the field. This three-year study represents the beginning of a long-term monitoring study of western hognose snakes and other reptiles at this study site.

Results and Discussion

We made 88 captures and recaptures of 73 snakes during this study. Thirty-four were adult females, 25 were adult males, and 14 were unsexed (mostly juvenile). We captured 60 snakes one time, 11 snakes twice, and two snakes three times. The population mean SVL was 328 mm (SD = 135 mm; Range = 168–633 mm) and the mean mass was 59 g (SD = 62 g; Range = 4–240 g). Females were larger than males for both SVL ($t = 2.38$; $p = 0.021$) and mass ($t = 2.87$; $p = 0.006$) (Table 1). SVL and mass were positively correlated for both females ($N = 33$, $r^2 = 0.86$, $p < 0.0001$; mass was not re-



Figure 1. *Heterodon nasicus* from an isolated population in northwestern Illinois. Photograph by Daniel A. Warner.



Figure 2. *Heterodon nasicus* performing a typical death-feigning display including the coiled posture, open mouth and everted cloaca. Photograph by Daniel A. Warner

Table 1. Snout-vent length (mm) and mass (g) of female, male and unsexed (mostly juvenile) western hognose snakes, *Heterodon nasicus*, in a northwestern Illinois population.

	N	Snout-vent length			Mass		
		Mean	SD	Range	Mean	SD	Range
Females	34	386	148	168–633	90	71	4–240
Males	25	303	107	172–495	45	42	5–149
Unsexed	14	232	57	170–353	12	10	5–43

corded for one snake) and males ($N = 25$, $r^2 = 0.85$, $p < 0.0001$). The size structure of the population showed a bimodal distribution with 36 snakes in the 150–300 mm (mostly juvenile) size classes and 19 snakes in the 400–500 mm size classes (mostly adult females) (Figure 3). Sex ratio of adult females to males was 1.36:1 and not significantly different from a 1:1 sex ratio ($\chi^2 = 1.37$, $p = 0.241$).

Data for recapture SVL and mass were collected for five snakes. All five showed an increase in both SVL and mass (Table 2). Two snakes gained 72 mm in SVL from 1997 to 1998 and one gained 100 mm in SVL over two years (1996–1998). Two females were gravid, so their increase in mass largely reflects the mass of their clutch and body mass gained. One non-gravid female and one male showed 129% and 80% increases in mass from 1997 to 1998, respectively.

Due to the small number of captures and recaptures, I used a Bayesian method to estimate the population size (Gazey and Staley, 1986). I used this method to calculate separate probabilities for each population size from 72 to 1000. The population size with the highest probability (i.e., 0.0083) was 205 and the 95% confidence interval ranged from 87 to 271. This size

Table 2. Increase in snout-vent length (mm) and mass (g) for five western hognose snakes, *Heterodon nasicus*, in a northwestern Illinois population.

	Sex	Capture		Recapture		Increase (% incr.)	
		SVL	Mass	SVL	Mass	SVL	Mass
RA 01*	F	477	76	521	152	44 (9)	76 (100)
RA 05†	F	410	83	510	151	100 (24)	68 (82)
RA 31	F	258	21	330	48	72 (28)	27 (129)
RA 34*	F	633	240	638	> 300	5 (0.7)	> 60 (> 25)
RA 60	M	330	46	402	83	72 (22)	37 (80)

* Gravid females.

† Two years between capture and recapture (1996–1998).

estimate includes only the study site (0.233 km²), which is a subset of the total continuous habitat (approximately 1.815 km²) available for these snakes in the area.

We observed western hognose snakes at our study site eating both turtle eggs and lizards. Consumption of turtle eggs by western hognose snakes has been reported from many parts of its range (Platt, 1969; Barten, 1980; Iverson, 1990; Kolbe et al., 1999). The frequency of snakes collected at our study site in 1997 that had consumed turtle eggs was 17.3% (Kolbe et al., 1999), slightly higher than the maximum of 11.1% reported by Platt (1969). Though several species of turtles inhabit or nest in our study site, eggs consumed by hognose snakes are believed to be painted turtle, *Chrysemys picta*. Hognose snakes were found on two occasions consuming eggs from *C. picta* nests (Kolbe et al., 1999). Fewer than 7% of snakes consumed the six-lined racerunner (*Cnemidophorus sexlineatus*) in both

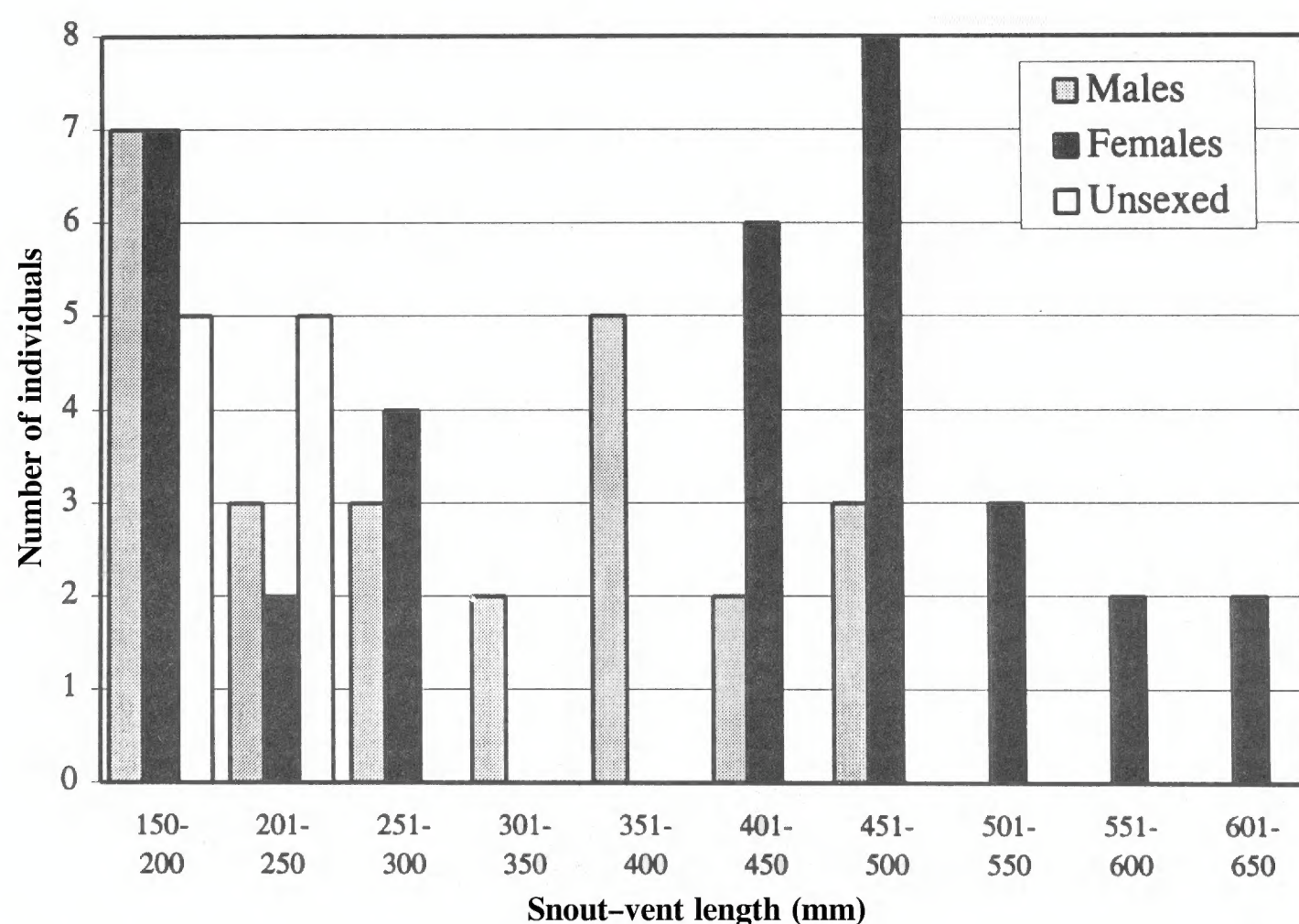


Figure 3. Size structure of a western hognose snake (*Heterodon nasicus*) population in a northwestern Illinois.

1996 and 1997 at our study site (Kolbe et al., 1999). In contrast, 22.2% of the snakes examined by Platt (1969) had eaten racerunners. The size of the *C. sexlineatus* population for a portion of the available habitat (0.465 km²) was estimated with 95% confidence to range from 66 to 222 individuals (Warner, 1998). No other prey items were observed, although we did not force snakes to regurgitate to assess prey composition in more detail.

The population estimate of between 87 and 271 individuals includes the study area only. Other habitat adjacent to the study site is suitable for hognose snakes. Thus, this size estimate almost certainly underestimates the total population size. Platt (1969) used Jolly's (1965) model to estimate the population size for a Harvey County, Kansas, population of western hognose snakes at 121 individuals. Platt's study area was an approximately 0.012 km² segment within a 1.317 km² county park. The Illinois population structure appears healthy with a balanced sex ratio, all size classes represented (Figure 3) from young of the year to the state record length individual (Total Length = 705 mm; see Kolbe et al., 1999), and gravid females. The range of SVLs observed in this study (Figure 3) is similar to that reported by Platt (1969). Growth rates reported by Platt (1969) decrease with size; the limited data in this study are consistent with this trend (Table 2). The six-lined racerunner population in this area is under study (see Warner, 1998) and some turtle nesting is monitored. However, little else is known about hognose snake feeding habits in this area except that they take both painted turtle eggs and six-lined racerunners. Future genetic work will address the genetic diversity and level of inbreeding in this population.

The demographic structure of this isolated hognose snake

population is similar to populations studied by Platt (1969) within the contiguous range of the species. Thus, I do not think there is immediate concern for the sustainability of this population. However, this population is particularly susceptible to habitat destruction, illegal collecting, and loss of snakes on roads. Though most of the suitable habitat in this area for hognose snakes is federal or state land, human activity is high (e.g., there are cabins, roads, a boat ramp, and a newly constructed bike path within the study area). These could all have a negative impact on this population of threatened snakes. Hopefully, the western hognose snake's threatened status in Illinois (Redmer and Kruse, 1998) will prevent further human threats to this population.

Acknowledgments

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Bull. Chicago Herp. Soc. 34(6):152, 1999

A Modern Locality for a Unicolor *Lampropeltis triangulum blanchardi* Stuart

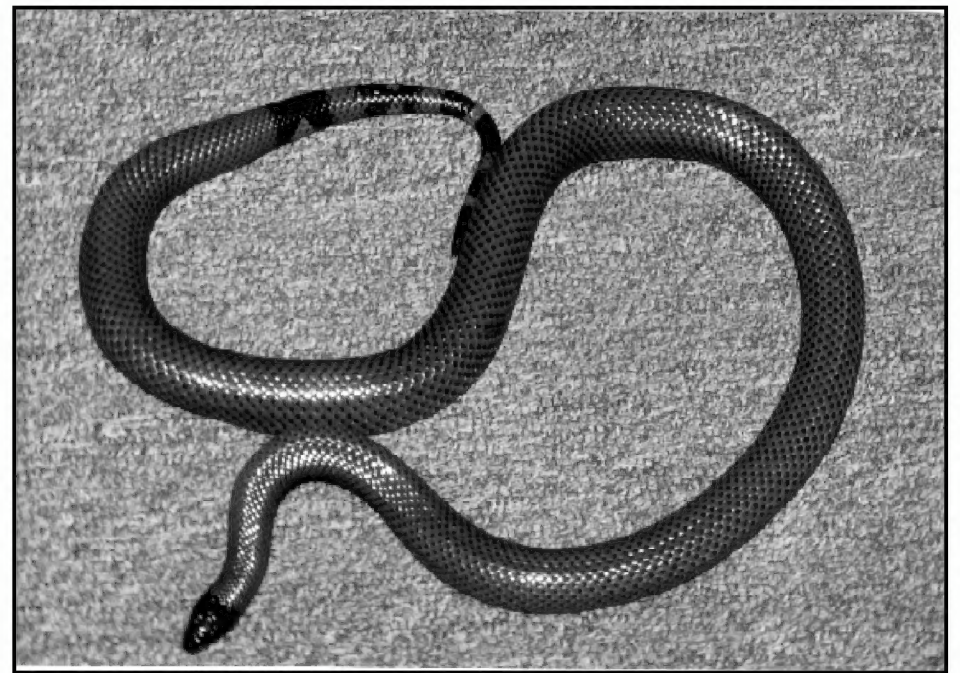
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Williams (1988) notes a single specimen of *Lampropeltis triangulum blanchardi* (UMMZ 76162), completely lacking body rings, having the typical black head of the subspecies but the body being wholly red except the body scales which are black-tipped. This specimen was reported from “Coloma Santa María” by Stuart (1935). In personal communication with Dr. Julian Lee, she states Coloma Santa María=Colonia Santa María, but the whereabouts of the locality is uncertain.

On 23 July 1997, at 2245 h, a young male, 58.2 cm, of the unicolor variation was observed on Highway 180, 14 km NW



Map of the general area with locality marked.



Unicolor *Lampropeltis triangulum blanchardi* from the Cancun area, Quintana Roo, Mexico. Photograph by Neil Alt

of the intersection with Highway 307 near Cancun, Quintana Roo, Mexico. It fits well the scalation description in Williams. The area is well-drained limestone, supporting a forest dominated by zapote (*Achras zapote*) and chaca (*Bursera* sp.), both of which rarely exceed 20 m in height. No rain had occurred within the area for the previous 8 days. Daytime highs ranged from 30°C to 34°C. Nighttime lows ranged from 23°C to 25°C. On no occasion did the author find much in the way of animal activity on the roads at night.

Acknowledgments

Special thanks to my wife Claire who caters to my herpetological whims.

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A New Pattern Aberration in Prairie Rattlesnakes, *Crotalus viridis viridis*

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The dorsal pattern of *Crotalus viridis viridis* typically consists of subrectangular blotches with even edges and a light border (Klauber, 1972). However, several types of dorsal pattern aberrations have been noted in *C. v. viridis* and other rattlesnakes (Gloyd, 1935; Gloyd, 1958; Chace and Smith, 1968; Nickerson and Mays, 1968; Klauber, 1972). These aberrants usually occur at very low frequencies in a population (e.g., 0.01–0.1%; Klauber, 1972). Here we describe a previously unreported pattern aberrant.

On 6 December 1997 we collected nine *C. v. viridis* excavated from a hibernaculum located 8 km N Scotts Bluff, Scotts Bluff County, Nebraska. These specimens are deposited in the University of Colorado Museum (UCM 59107-59109, 59115-59117, 59285-59287). Four of the nine snakes have paired dorsal blotches on at least part of the body (Figure 1). UCM 59117 (female, 65.1 cm snout-vent length [SVL]) has the most extensive pairing of dorsal blotches with blotches 2–9 and 17–29 completely paired with a narrow white border around each paired blotch. UCM 59115 (male, 57.9 cm SVL) has blotches 24–28 bow-tie shaped or paired. UCM 59107 (female, 51.5 cm SVL) has dorsal blotches 2–7 bow-tie shaped and blotches 15, 17, 23–25 completely paired. UCM 59285 (female, 58.5 cm SVL) has dorsal blotches 18, 22 and 23 completely paired. UCM 59109 (male, 28.3 cm SVL), first eight blotches are bow-tie shaped.

These findings are significant for three reasons. First, this is the first published report of paired blotches in *C. v. viridis* (but see photo in Sievert and Sievert [1993]), although paired blotches are typical in one species of rattlesnake, *C. pricei* (Klauber, 1972). Second, paired blotches were found on four of nine snakes from a single population, a much higher ratio

than reported for other aberrant patterns. Third, we have also observed bow-tie shaped dorsal blotches in two specimens of *C. v. nuntius* (FMNH 25389, 207776), but not in specimens of any other subspecies of *C. viridis* that we have examined.

We thank S. Kerr for notifying us of the den excavation and the ranchers for allowing us to come along; A. Resetar (Field Museum of Natural History) for permission to examine specimens of *C. v. nuntius*; P. Stone for pointing out the photo in the Oklahoma reptile book.

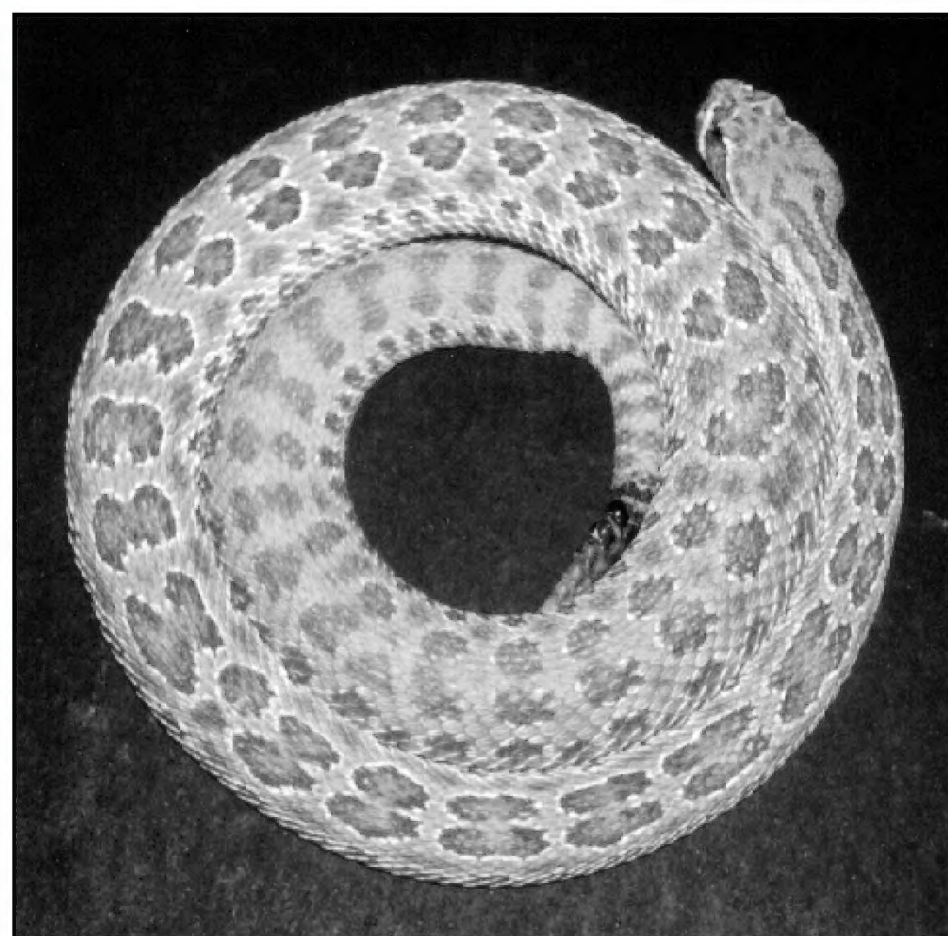


Figure 1. UCM 59117 showing extensive paired dorsal blotches.

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Notes on the Captive Breeding of Ornate Spiny-tailed Lizards

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In 1995, I acquired a subadult wild-caught female ornate spiny-tailed lizard (*Uromastix ocellatus ornatus*) that was in excellent health and had a nice disposition. In spring 1997 she bred with another imported male, named "King Tut," also purchased in 1995. It was my original thought that the two lizards were similar in age; however, during a visit to my home, herpetoculturist Randall Gray suggested that "Tut" appeared to be a lot older, possibly even 8 to 10 years old. Tut's weight was 240 g. The female, "Daphne," was a robust 300 g at the time of conception.

Since this was my first breeding of this species, I had radiographs taken to confirm the presence of developing eggs and a blood serum calcium level count was performed by Dr. Cheryl Roge. Another female was gravid so lab tests were performed on her as well. My concern was proper calcium levels for proper egg development and for healthy uterine contraction during oviposition. It has been speculated that calcium levels have a direct influence on uterine health and normal-to-high calcium levels are necessary for normal egg deposition. However, since there were no existing data for *Uromastix ocellatus ornatus*, Dr. Roge and I extrapolated our findings from the blood calcium levels for gravid green iguanas (*Iguana iguana*). Normal serum calcium levels in reptiles generally range from 8 to 20 mg/dl. The normal level for a healthy gravid green iguana is 25 mg/dl. The blood calcium levels for my two females were only 12 mg/dl, which is significantly lower. Whether or not these findings were even comparable, it was something to think about. Not wanting to risk losing these lizards in case of egg binding, we chose to provide supplemental calcium. We chose to administer Calphosan, an injectable calcium, once a week, until it came close to the time for the eggs to be laid. Dr. Roge assured me this was a treatment that should not have any adverse affects, but that we should continue to monitor the animals' progress. Whether or not this therapy was effective is uncertain; however, I chose this treatment as kind of an insurance policy.

After 2½ weeks of Calphosan therapy, both my females laid their first clutches a day apart. On 4 June 1997 Daphne laid 18 eggs, 12 of which were fertile. "Titti" on the following day laid 17 eggs, 12 of which were fertile. The eggs were maintained in a Hovabator incubator at 90°F for approximately 72 days.

On 16–18 August 1997, 24 beautiful and robust baby *ornatus* emerged from their eggs. Daphne produced 10 males and 2 females and conversely, Titti produced 2 males and 10 females. Talk about a breeder's miracle blessing!

"Piglet," aptly named for her size and appetite, was the largest of my female babies. She was very large compared to her littermates. Her male sibling, "Bully," was the largest of the male babies. Piglet grew to reach 130 g within 10 months; Bully attained a weight of 120 g in that same period. It

seemed appropriate that I house Piglet and Bully together, apart from all the other *smaller* siblings, at least until they reached adulthood.

Almost immediately, the two copulated. Within days, Piglet grew more aggressive towards Bully and I had to remove him. She began to grow larger and started to take on the shape of a small Ping-Pong paddle. My suspicions that she was gravid were confirmed when she began digging in the corners of her enclosure. She had reached a weight of 150 g. To serve as an egg-laying site, I placed in her enclosure a covered, 5-gallon (~19 l) Rubbermaid tote filled with 10–13 cm of damp play-sand, with a small opening cut out of the side. She immediately took to the egg box and began to search for a dig site. My chief concern was that if she *had* developed eggs, would her physical immaturity render her eggbound? This was a concern that both Randall Gray and I shared. Again, as an insurance policy, once I suspected she was gravid, I supplemented her with oral drops of Neo-Calglucon, a calcium supplement given to premature human babies.

On 5 July 1998, Piglet laid 11 *large, adult-sized* eggs. Her weight after oviposition was 80 g. At this time, she was offered water from an irrigation syringe, from which she drank freely! Right after egg-laying is the only time my animals ever drank water. Another breeder female also drank greedily for 2 days following oviposition. Upon removal of Piglet's eggs, they all appeared fertile. However, 3 of the eggs must have had micro-tears in them because, within a week, as they began to expand, they also began to leak. Two eggs became dehydrated during midterm development. Upon inspection of the dead eggs, I found half-formed babies. The only explanation I can offer is that I had placed these 2 eggs in a different container which may have had too much air exchange. The remaining 6 eggs hatched on 16 September 1998, exactly 72 days post oviposition. The babies were immediately active and alert. The hatchlings' weights varied between 6 and 8 g. They had beautiful markings composed of dark red and orange patterns. Another unusual occurrence was that the eggs took on an aqua-greenish tint a few weeks before they hatched. This coloration seemingly developed from *inside* the egg, rather than outside the egg. When the babies emerged, a couple of the animals had retained the bluish tint on their tails. Whether or not this is a temporary phenomenon remains to be seen. But in speaking with other breeders (Randall Gray, pers. com.; Greg Gosney, pers. com.), this was nothing they had experienced previously.

Piglet has since recovered and has already attained the beautiful speckling that *ornatus* develop at maturity. She is a peach- and brown-colored lizard with the characteristics of a miniature adult. Bully is growing steadily as are all the other males from August 1997. He is a stunning navy blue with yellow stripes.

I must note that no brumation had occurred prior to this

breeding. This is another important observation which indicates that a cool-down period may not be necessary for captive born ornate spiny-tailed lizards. However, I will brumate all my subadults and adults this year.

Piglet's mother, Daphne, died 4 months post partum. Cause of death appeared to be kidney failure due to microscopic gout. A preliminary necropsy showed no obvious cause of death, so tissue samples were sent to Dr. Michael Garner at Northwest ZooPath, an exotics pathology specialist out of Washington who then confirmed the cause of death as microscopic gout, as well as a clot found in her heart suggesting heart failure. She deteriorated quite rapidly and died at approximately 4 years of age, although her exact age is uncertain. Dr. Roge suggested that the gout may have been secondary to the heart failure.

All this new information is important documentation on the future breeding of this magnificent animal. It is extremely exciting to know that there are several herpetoculturists working with this species. There is still plenty to learn about *Uromastyx ocellatus ornatus*. My observations indicate that sexual maturity *can* occur as early as 11 months in captivity without any winter brumation.

As for the rest of Piglet and Bully's siblings and littermates, I have seen some early signs of maturity. All the 13-month-old males have reached their full adult coloration and express a lot of posturing around the females. Some of the females are "marked" by the alpha males in the colonies. I suspect these animals will breed in the spring, following a short brumation. They will be 1½ years old.

In another breeding-related incident, my female, Titti, double-clutched. In April 1998, she laid 19 eggs, 9 months after her first clutch. She was housed with a different male,

approximately 4 to 5 years of age, who was somewhat submissive during the post partum period and I had not witnessed any copulation or aggression. There is no documentation that these lizards retain sperm, so it is more likely that they bred.

The eggs were not full and chalky; nor were they oval in shape, as is the norm. They were round and varied in size. Eight eggs went bad within days and were most likely infertile. Eleven eggs went full term and hatched after 81 days of incubation; all but 4 died soon after they emerged. One baby was born completely grey with no pattern and died within a week. The 3 survivors are now 2½ months old (as of September 1998) and are still the size of hatchlings, weighing a mere 10 g. They are less active than babies I have hatched in the past, yet have decent appetites and dispositions. I am administering daily vitamin and Neo-Calglucon therapy to get them over this health hump, so to speak, but their status changes almost weekly. My theory on this is that the female, Titti, copulated too soon and had not recharged her reproductive system (that is, had not built up her calcium levels) for proper egg development. Even though these lizards produce large clutches, they are not necessarily subsequently prolific, and these animals may only clutch once every other year in the wild. Breeding behavior in the wild is still largely unknown (Randall Gray, pers. com.).

In closing, I feel hopeful about the future of this beautiful animal in captivity and I will continue to dedicate myself to the propagation of this species. In my opinion, there is nothing more magnificent and regal than the ornate spiny-tailed lizard.

Acknowledgments

Special thanks to Randall Gray, Greg Gosney, Douglas Dix, Dr. Cheryl Roge, Dr. Stephen Barten and Dr. Byron DeLaNavarre.

Captive Breeding of the Timber Rattlesnake (*Crotalus horridus*)

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Abstract

The timber rattlesnake (*Crotalus horridus*) is a species that is declining throughout much of its range. This species has proven to be difficult to propagate in captivity. Data are provided that show a limited success in the captive breeding of this species compared to wild or wild captured specimens. With an established breeding protocol, neonates will be available to conduct research into augmenting existing populations and/or establishing populations where they have been exterminated. The advantage of this captive breeding program is that the augmentation of or reestablishment of populations will not come at the expense of existing populations.

Throughout most of the northeast portion of the United States, the timber rattlesnake (*Crotalus horridus*) is declining. In eight states, the timber rattlesnake is classified as endangered; in four states, it is listed as threatened. In Kansas it is classified as "in need of conservation." Rhode Island regulations require a permit to possess this snake. West Virginia lists the timber as a species of "special concern." Pennsylvania lists this serpent as a "candidate species." In Pennsylvania this level of classification means that this species could become endangered or threatened in the future (Shaffer, 1991). Martin and Smith (1990) visited 312 known snake dens in Pennsylvania and concluded that 75% of these sites are not viable. These dens do not have the number of mature, breeding females to sustain a stable population.

With this documented decline, a program of augmenting or reestablishing populations in wilderness areas where they once occurred may be appropriate in the not too distant future. Reinert and Rupert's (1996) research into the translocation of adult snakes indicates a definite lack of survivorship. These wild-caught adults were released at a known snake den that had a population of rattlesnakes. The transplanted individuals lost body weight, traveled erratically and eventually died. The translocated snakes exhibited a higher mortality than the resident snakes. No experimentation has been done with newborns. Reinert and Zappalorti (1988) have made observations that neonates will scent-trail adults to a suitable winter hibernaculum. The neonates followed any adult snake. For this reason, I suggest translocating captive-born neonates. They have no prior knowledge of the area, will probably behave as resident newborns and will hopefully survive the transplant, thus increasing the population size.

No release of rattlesnakes should be attempted without first consulting the appropriate state wildlife agency responsible for timber rattlesnake management.

In the wild, females mature at 5–11 years of age (Martin and Smith, 1990; Shaffer, 1991; Brown, 1993; Martin, 1993). The minimum documented total length for a breeding female was 76.5 cm (Reinert, 1990). Martin (1993) listed the minimum size as 93.0 cm and Brown (1993) measured 97.0 cm. Berish (1998) reported the smallest sexually mature female used for the skin trade in Florida was 109.9 cm. This female

was post-parturient. I have in the past captured 4 gravid females at lengths that were less than those recorded by Martin (1993) and Brown (1993). The smallest was 85.7 cm and produced a litter of 14 living offspring. The other females measured 89.0 cm (10), 90.0 cm (13), and 91.0 cm (11). The numbers in parentheses represent the number of live births. Records for the minimum mass for sexually mature females are lacking. I have found only two such references: Galligan and Dunson (1979) recorded 430 g; Brown (1993) lists 600.0 g.

Free-roaming female rattlesnakes usually mate from July to August (Shaffer, 1991). Martin (1993) records the mating time as from August to September. The sperm is stored in the female's body and the eggs are fertilized the following spring when the females emerge from hibernation. Martin (1993), Galligan and Dunson (1979) and Klauber (1972) all list the birthing times as between 4 August to 16 October. The earliest that I have observed newborns in the wild was 8 August. This occurred near the State College area of central Pennsylvania. The latest was 14 October; this site was in Tioga County, Pennsylvania. In both instances, the young had not yet completed their first shed.

Typical litter sizes range from 5 to 17 (Surface, 1906; Klauber, 1972; Galligan and Dunson, 1979; Martin and Smith, 1990; Shaffer, 1991). The same authors list the average litter size to be between 7 and 10. The young average 31 cm in length and weigh between 20 and 25 grams (Brown, 1993). Galligan and Dunson (1979) list the length as between 22.5 and 30.8 cm and weight from 13.4 to 31.8 g. Galligan and Dunson found that there is no relationship between the size of the female and litter size.

Data that I have collected from seven wild-caught gravid females provide the following information:

Average total length of females: 93.4 cm (range: 85.7 to 107.0)

Date of birth: 23 August to 15 October

Total number of live births: 86

Average number of live births/litter: 12.2 (range: 10 to 14)

Average mass of young: 19.1 g (range: 11.2 to 25.3)

Average length of young: 26.9 cm (range: 19.5 to 33.0)

Information on the maintenance of timber rattlesnakes to induce reproduction is lacking. Murphy and Armstrong (1978) list the active range for “rattlesnakes” as between 18° to 32°C with no reference to lighting. Walls (1996) recommends “a gradual reduction in temperature, light and food for about a month.” Then he suggests keeping the snakes at a temperature of approximately 10°C for 4–8 weeks.

The heating and lighting (full spectrum) regimen that I used is as follows:

Date	Temperature	Light:Dark
1 October	ambient	14:10
1 November	10°C	0:24
1 January	13°C	8:16
15 January	16°C	10:14
1 February	18°C	10:14
15 February	21°C	12:12
1 March	24°C	12:12

From 15 March until the following 1 October, the snakes are maintained at 27°C, or the ambient temperature if it exceeds 27°C, and a light:dark schedule of 14:10.

Martin (1992) reported that timber rattlesnakes at his study area in northwestern Virginia hibernate for an average of 204 days. Brown (1992) reported that snakes at their northern extreme in upstate New York are dormant for an average of 224 days. He also reported that timber rattlesnakes usually enter hibernation when the temperatures drop to 15°C and emerge from the hibernacula when the temperatures rise to 15°C. In contrast, my captive snakes are dormant from approximately 15 October to 15 January. This results in a dormancy of 92 days.

My captive snakes were offered house mice (*Mus musculus*) on a weekly basis from the time of birth. The mass of each mouse consumed was recorded as was the mass of each snake prior to feeding. The length of each snake was determined monthly using a squeeze box and a map measuring device. These two snakes had their rattles painted (one red and the other yellow) to facilitate identification.

Their yearly food intake, in grams, was as follows:

	Red	Yellow
1994	77.9	23.6
1995	626.3	488.3
1996	510.1	876.3
1997	1833.9	1825.7
1998	825.6	111.7

The snakes were offered food during the first week of March and usually refused to eat until approximately the middle of that month. Food was regularly taken until late August or early September when voluntary feeding stopped. During the 1998 active season, Red consumed mice regularly

from 13 March until 15 May. She then fasted until 28 August and had her last meal of the season on 4 September. She entered dormancy without any further feedings. Yellow consumed 2 mice on 6 March and 1 on 13 March. The total mass of these 3 mice was 63.5 g. She then refused food until after giving birth. On 10 July she regularly accepted food until 11 September when voluntary feeding stopped for the remainder of the active season.

Their growth by mass and length recorded at the end of each active season is as follows:

	Red		Yellow	
	Mass (g)	Length (cm)	Mass (g)	Length (cm)
1994	38.5	34.5	20	30
1995	268	72	206	66.5
1996	444.5	85	472.8	83
1997	1049	102.5	1035.9	103

Both females exceeded the minimum size listed by Reinert (1990) and were within the length ranges listed by Martin (1993) and Brown (1993) and both exceeded the masses listed by Galligan and Dunson (1979) and Brown (1993).

My two captive-born females (from the same litter) were born on 10 October 1994. Red mated on 11 July 1997 at a total length of 94.5 cm and a mass of 770.4 g. Yellow mated on 22 June 1997 at a total length of 96.5 cm and a mass of 942.4 g. Red was first observed copulating at 1300 hours and remained in coitus until at least 2400 hours, when observations ceased. Yellow was first observed mating at 1330 hours and remained in coitus until 2400 hours when observations ceased. These matings lasted 11 hours and 10.5 hours respectively. Both females mated with the same male, who was born 25 August 1986, total length 132.0 cm and a mass of 2341.5 g.

On 3 July 1998, Yellow produced a litter of 2 living young and 3 nonfertile eggs. If all the eggs ovulated had resulted in living neonates, then this litter would have been at the lower extreme for litter size. Her length at the time of birthing was 103.0 cm and her preparturition mass was 974.1 g. Her post-parturition mass was 881.4 g. As of this writing, Red has not given birth. Her current length is 105.0 cm and mass is 1068.4 g. Red was not observed mating during 1998. Yellow’s offspring both were 27.0 cm in length; their masses were 17.5 g and 20.0 g. Both lengths and masses are within published ranges for newborns from the wild.

The small litter resulting from my breeding programs mimics the results reported by Gerry Salmon (see Kostka, 1998). Salmon did not provide information on heating/cooling or lighting cycles. This litter resulted from the first mating of this snake and although there is no relationship between the size of the female and the litter size, perhaps there is a correlation between age of the female and litter size. At the time of mating, both of my females were not quite three years old, even though their size (length and mass) was within the limits for sexuality maturity. Their ages definitely do not correlate

with wild individuals. This may have had an impact on their reproductive success. Another facet that needs exploration is the heating/lighting cycle. The difference in dormancy period, from wild to captive animals, ranges from 112 days (compared to Martin, 1992) to 132 days (compared to Brown, 1992). Perhaps this is a key to improved reproductive success. Future experimentation may shed some light on these topics.

Although my results are not outstanding, I believe that this is the start for a captive breeding program. I hope that my

data will stimulate a dialogue among individuals concerned about this species that will lead to improved reproductive success in captivity.

The maintenance of venomous snakes should not be attempted by inexperienced people and may be prohibited by local ordinances. The captive breeding of venomous snakes should not be attempted unless there is a specific scientific project involved.

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HerPET-POURRI

by Ellin Beltz

ReptileFest '99

Every year, Lori King-Nava and Gary Fogel continue to amaze me with the time and effort they put into ReptileFest. I was only able to be there Sunday, but I saw Ilene Sievert, Bob Bavirsha and his son Dan, the whole Spitzer clan, Mike and Joan and Ron and Dottie (would there be a CHS event without this tetrarch?), Lisa Koester, Jenny Picciola, Jim Nesci and “Bubba,” Marco and Ryan, Gino Martinez, Gary Kostka, Jack Schoenfelder, the Australian frog guys, the Michigan Massasauga Madam, the Iguana Squad, the Turtle Patrol, and about 500 kids. We also had vendors of embroidered clothing, Dan Rowen’s photography (“Herps that don’t eat!”), live food shippers, and a bunch of other stuff. Audrey Vanderlinden was pointed out to me by several CHS members, but we didn’t get a chance to talk this year. I’m sure I’m forgetting people who will all be really upset with my poor memory—but just remember, now that I’m really a college professor, I am entitled to be (and often am) absentminded. So if I have forgotten you, don’t shoot me, I’m doing the best I can. Also, I guess I’m not the best correspondent for the event, because from when we opened to about a half-hour before the close, all I saw were kid’s arms, ankles and wrists. Don Wheeler and I were “tattooing” children again—our colleague Kim Smith had knee surgery and between the casts and the pins was unable to join us. So our tattooing lines were a little longer than usual—but we all survived pretty well. We did a fair number of adults this year—which was a change from last year. And we had a lot of repeat customers which I found surprising. I also had a chance to meet a couple of people who bring home more rocks than I do from their trips. Paul and Gabe Sereno (“Project Exploration”) exhibited a life-size model of a *Carcharodontosaurus* skull. They also brought real fossilized bones of *Suchomimus*—the crocodile mimic dinosaur—for people to see and touch. Totally amazing. Before we opened Paul drew a *Suchomimus* on me and Don Wheeler drew “Spot” on him but we ran out of time to illustrate Don, too! Besides the incredible display stuff from Bob Bavirsha, he also brought a huge blue cattle trough and let his snapping turtle and caimans swim around for everybody. I never really noticed before, but monitors tuck their arms against their sides and wiggle like salamanders to swim. And something Bob taught me years ago was demonstrated to a whole new generation of Festers—crocodilian pupils stay vertical even if you tilt the croc. I showed that to my students in a National Geographic video in lab—I don’t know why it is so, but it is very interesting. Although I wasn’t there, Jenny tells me that the Friday night set-up crew from Shedd Aquarium included Shannon Nelson, Dave Juarez, Eileen Semeniuk, Nellie Gianni, Debbie Schwarz and Patrick Liu (these tireless volunteers also helped with animals all day Sunday) and McWilliams Electric workers Daniel Furse, Michael Hudson and Mike Knight powered the show with equipment donated from Intelligent Lighting Solutions. Gary Fogel set up an exhibit of just about every kind of model dinosaur ever made (and if I ever find my old ones, I know who to give them to). Some stood, some flew, some fell over—but it was really really cool. If you

were not there, you missed the high point of the CHS calendar. Plan to be there next year!

Thawed for food

The *Wall Street Journal* reports that there is a shortage of feeder rats and mice. The shortage is due to the rise in popularity of reptile pets. It is currently estimated that nearly 20 million people keep mice-eating reptiles. “What used to be a haphazard assortment of backyard rodent-raisers has become a \$235 million-a-year industry replete with air-conditioned breeding rooms, Internet catalogs and competitors scurrying to expand. About 93 percent of the 180 million rats and mice raised in the U.S. this year will be sold as food, and that still won’t meet the demand. An additional two percent are sold as pets, and five percent are destined for research laboratories. . . . Helping to worsen the shortage is a wave of so-called power feeding of reptiles—tossing them two or more rodents a week, which encourages far faster growth. . . . All this eating can be unhealthy for the reptiles. . . .” Many people, zoos and other institutions have started breeding their own snake snacks, both to avoid high prices and temporary shortages. [May 13, 1999, from Rob Streit whence also the dyslexically hysteric headline] Meanwhile in a recent issue of *Science* (read but not clipped as it was the SCR copy) a researcher reports the possible transmission of mouse disease by means of mouse serum. Seems that some work with serum in the same labs as are kept priceless genetic strains of live mice. Serum can transfer disease to captive mice and the scientist was pointing this out to colleagues in his letter. What’s next, mad mouse disease?

Reptiles redux

While some researchers claim that Head Start programs do sea turtles more harm than good [*Orlando Sentinel*, February 14, 1999, from Bill Burnett], others are heartened by the nesting of another Kemp’s ridley turtle which was part of the repopulation efforts on Padre Island. The actual turtle was observed by a volunteer. It was tagged with a satellite transmitter, the eggs were taken to an incubator and will be released on the beach when they hatch. [Austin TX *American-Statesman*, April 13, 1999, from William B. Montgomery]

Send your favorite herp

The U.S. Postal service has released a series of stamps on the Sonoran Desert flora and fauna. They are the first in a series of “Nature of America” stamps. The poster which accompanies the stamp set shows desert tortoises, lizards, rattlesnakes and a gila monster. [Tempe AZ *Tribune*, March 31, 1999, from Tom Taylor]

Big, fat, happy and green

That’s how one volunteer described about 200 Jackson’s chameleons in a rehab center. They weren’t always in such good shape. In fact, they were in pretty bad shape when they were rescued from smugglers by the U.S. Fish and Wildlife Service. They were found in burlap sacks, dry, pale and unhappy. Volunteers sorted them out by age and sex—because male

Jackson's will eat newborns and gave them warm lights, water sprays and lots of bugs. Jackson's are originally natives of Tanzania but they have become popular pets around the world. [*Los Angeles Times*, April 20, 1999, from new contributor (to this column!) Marcia Rybak]

Time to mind our p's and q's

A prominent University of Kansas professor emeritus recently admitted in a scholarly journal that he illegally shipped amphibians and reptiles from South America to his institution for three years in the early 90s. In addition to the \$5000 fine, he has agreed to stop collecting for a year and to write an apology. [*States News Service* (Kansas), May 10, 1999, from Kim and Wes von Papineäu]

Gets paper out of thin air

Researchers at the University of Miami blame climate shifts associated with apparent global warming for the extinction of the golden toad in the Monteverde Cloud Forest in Costa Rica. It seems that moisture that used to reach the continental divide in quantities sufficient to support the forest has suddenly been reduced—coincident to the disappearance of the toads. Curiously, Monteverde was settled by U.S. Quakers in the 1950s. They set aside a large nature reserve in the cloud forest, and it has remained protected since. Other species have declined or moved their ranges in response to what researchers describe as a combination of El Niño effects and general apparent global warming trends. The researchers did point out that, since no one realized the toads were vanishing until they were gone, no research on the exact cause of the extinction is available and all else is speculation. [*Edmonton Journal*, April 25, 1999, from Kim and Wes von Papineäu]

Don't forget 3,000 years of inter-island trade

Curiously, lizards are being used as evidence of time and direction of inter-island Polynesian migrations. It has long been recognized that the Indonesian islands, Australia and New Guinea were populated by about 40,000 years ago, but there were later waves which colonized islands farther east. While human genetic information appears to support origins in the Indonesian islands, rather than mainland Asia as had been previously put forward, lizard genetic information from *Lipinia noctua* showed that it was most genetically uniform on the Polynesian islands—essentially opposite. Some had proposed that the lizards (or even one pregnant female) stowed away on the boats which carried the first Polynesian voyagers—hence the genetic bottleneck effect. In a parsimonious proposal, one researcher wrote in *Nature* that if the lizards are bottlenecked and the humans show bottlenecking—then both bottlenecks must be the same. However, others have pointed out that the lizards don't live on the mainland, that the Polynesians are more closely genetically to Indonesian populations and that all this pretty much blows the “one race, one event” argument all to pieces. [*Archaeology*, May/June 1999, from Kim and Wes von Papineäu]

Thanks for the starlings . . .

A man in Darlington, England, was bitten by a California kingsnake and treated in the hospital for his bite because—

a few hours—no one knew if the snake was venomous or not. [*Sunday Mirror*, May 2, 1999] A short eight days later, a Southsea, England, hairdresser found a 2-foot orange and yellow snake on the doorstep of her shop. They tried to put it in a plastic container, but it started hissing and striking. A former Royal Marine then used a cardboard to push the snake into a four-foot high cardboard box. A pet shop worker identified the snake as a male American corn snake and assured everyone it wasn't dangerous—even if it was a bit annoyed. [*Portsmouth News*, May 10, 1999, both from Kim and Wes von Papineäu]

One more for Dave Chiszar

A Thai snake charmer was killed by his own python. He had the snake in a sack and pulled it out for a show. The snake wrapped itself around his neck and did not let go until he was dead. [*Canadian Press*, May 4, 1999, from Kim and Wes von Papineäu]

Greed versus nature

- Many news outlets are reporting the tragic decline of Southeast Asia's turtles. The *Toronto Globe and Mail* reports that “profiteers . . . have been gathering every turtle in sight and selling them for food and folk remedies in the turtle markets of China. . . . Collectors have made such a clean sweep in countries like Vietnam and Laos that it can be impossible to find a single turtle, even in ideal habitats in national parks and remote preserves. In the parts of Southeast Asia where turtles do persist, they are fast disappearing to satisfy the huge demand in China. Scientists have been reduced to looking for turtles in China's markets, as they say an entire fauna is being bought, sold and eaten into oblivion.” [May 5, 1999] One researcher called the Chinese markets “a black hole for turtles.” [from Kim and Wes von Papineäu] This was also the cover story of *Vivarium* (10.4).

- “A Malaysian man was sentenced . . . to a week in jail and fined \$2,900 for smuggling and torturing a load of 2,546 endangered snakes that he tried to slip through a border crossing from Thailand. . . . [He] stuffed the reptiles in nylon sacks and plastic baskets, . . . [including] 105 Asiatic cobras and 2,441 oriental rat snakes, both of which are protected species under Malaysia's Wildlife Protection Act. Most of the snakes would have ended up in soup bowls in Chinese restaurants or on dinner plates in many Asian cities, where snake meat can sell for around \$6 per pound. Some people also drink snake blood, believing it can cure ailments ranging from backaches to impotency.” [*Reading Eagle/Reading Times*, April 20, 1999, from Walt Loose]

- Meanwhile more than 17,000 turtles intended for Moscow dinner tables were seized at the Tajik-Uzbek border. The illegal shipment would have been worth between \$17,000 and \$35,000 on the street. Customs officials spent three days counting the turtles which were released in a forest near where they were confiscated. [*Russia Today*, May 5, 1999, from Kim and Wes von Papineäu] It will be interesting to see if any survive.

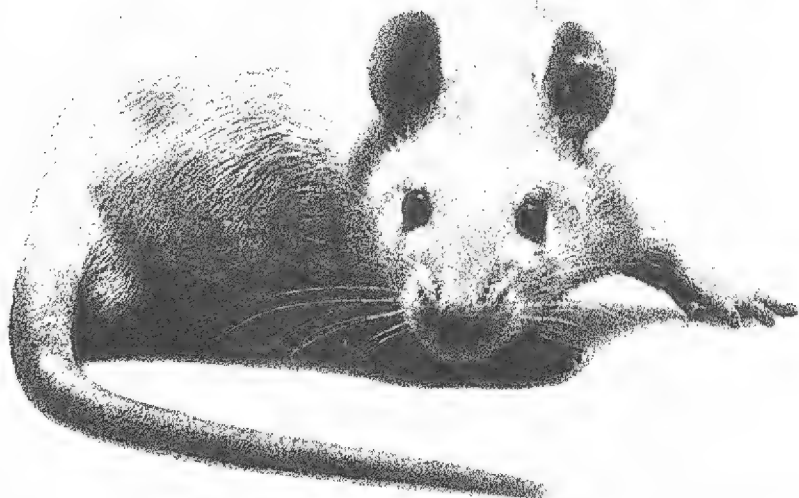
- “A Florida man was sentenced to 2½ years in federal prison

for smuggling rare reptiles from Madagascar to the U.S. . . . Tommy Crutchfield . . . pleaded guilty in January to smuggling and other charges involving more than 200 snakes, iguanas, turtles and other reptiles . . . as part of a conspiracy between Crutchfield and two Germans, Wolfgang Kloe and Frank Lehmeier, who smuggled the reptiles out of Madagascar. . . . Kei Tomono of Japan, also was involved. . . . Kloe and Tomono have received prison sentences. Lehmeier remains at large. . . . Crutchfield was considered one of the largest reptile importers in the U.S. before he fled to Belize in 1997, when authorities notified him that he was under investigation. Last August (1998), he was expelled from Belize and arrested in Miami as he returned to the U.S.” [Reading Eagle/Reading

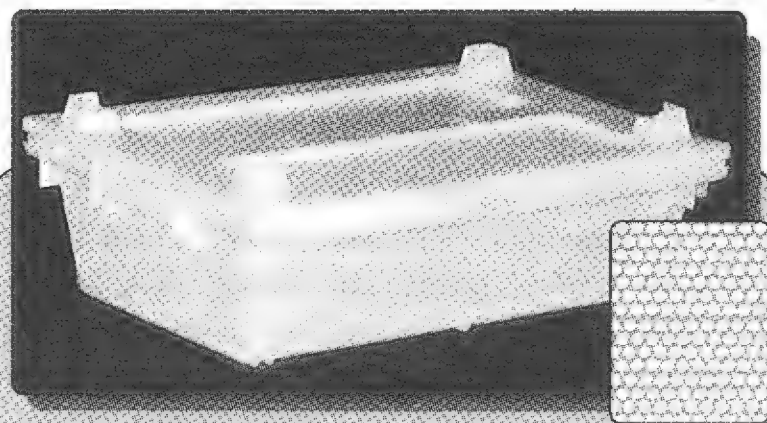
Times, April 19, 1999, from Walt Loose]

Thanks to everyone who contributed clippings, notes, photos (thanks Gary!) and other stuff this month. I have a few things still in the folder for next month, but don't let this stop you from sending in things for this column. Just take whole pages of newspaper, attach your name (mailing labels are great for this) and fold a minimum number of times and mail to: Ellin Beltz, 1647 N. Clybourn Avenue, Chicago, IL 60614-5507. If you must clip, be sure the name and publication slug and your name are firmly attached to each piece. All contributors are acknowledged. So, don't delay. Send stuff. Letters only to my E-mail <ebeltz@ripco.com>.

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Herpetology 1999

In this column the editorial staff presents short abstracts of herpetological articles we have found of interest. This is not an attempt to summarize all of the research papers being published; it is an attempt to increase the reader's awareness of what herpetologists have been doing and publishing. The editor assumes full responsibility for any errors or misleading statements.

RADIOTELEMETRY OF LEOPARD LIZARDS

G. D. Warrick et al. [1998, J. Herpetology 32(2):183-191] used radiotelemetry to determine habitat use and home range characteristics of 16 blunt-nosed leopard lizards (*Gambelia sila*) at two sites on the Naval Petroleum Reserves in California. Space use parameters of eight lizards occupying an area of relatively dense vegetation in 1982 and eight lizards inhabiting a sparsely vegetated site in 1984 were compared. Home range size, core area size, and amount of overlap of ranges did not differ significantly between sites. The difference in average home range size between males (4.24 ha) and females (2.02 ha) was borderline significant ($P = 0.054$). Female home ranges and core areas were overlapped extensively by male ranges (= 79.8% and 50.3%, respectively). There was no evidence of intrasexual overlap of core areas. Male home ranges overlapped the ranges of up to four other males but female ranges did not overlap one another. At the more densely vegetated site, leopard lizards used washes significantly more than grassland, floodplain, and road habitats and they used grassland significantly less than other habitats. At the sparsely vegetated site, grassland was used more than wash habitat and hills were used less than all other habitats. Our data indicate that leopard lizard activity is concentrated in washes and other open areas when herbaceous cover is dense, but they are capable of utilizing the more extensive grassland habitat if vegetation is sufficiently sparse. Creating open space within the grassland habitat may have important management implications for this species in some areas.

ANATOMY AND SYSTEMATICS OF *XENOPHIDION*

V. Wallach and R. Günther [1998, Amphibia-Reptilia 19(4): 385-404] describe the internal anatomy of the Malaysian snake genus *Xenophidion* and compare it with that of members of other snake families. A suite of primitive characters eliminates *Xenophidion* as a possible member of the Caenophidia (advanced snakes): only two characters could conceivably suggest a relationship to the Caenophidia and both are examples of losses and thus of low phylogenetic value in assessing relationships. However, among lower snakes a sister group relationship is demonstrated with the Tropidophiidae of the Neotropical region. Besides possessing nearly identical viscera and topographical arrangement thereof, *Xenophidion* shares several characters with the Tropidophiidae. The authors create a new family, the Xenophidiidae, to contain the genus. The Xenophidiidae share one synapomorphy with both the Tropidophiidae and Bolyeriidae. Therefore, the authors propose that these three families be united in the superfamily Tropidophioidea. A phylogenetic analysis of 52 characters results in the following preferred hypothesis of relationships: (Boinae, (((Bolyeria, Casarea), (Xenophidion, (Exiliboa, Ungaliophis)), (Trachyboa, Tropidophis))))), Acrochordus).

OLIVE RIDLEY DECLINE IN COSTA RICA

R. A. Valverde et al. [1998, Chelonian Cons. and Biol. 3(1): 58-63] report on the *Lepidochelys olivacea* (olive ridley sea turtle) nesting colony at Nancite beach, Costa Rica, which has been monitored since 1980. Estimates of numbers of nests oviposited throughout the term of the study were obtained by empirical sampling of the mass nesting assemblages (*arribadas*) occurring during the peak nesting months of August through November for 15 years. The method by which these estimates were obtained is described and discussed. The number of nests laid during each *arribada* averaged 37,960 and varied in size from 148,000 nests in October 1980 to 350 nests in August 1993. Data showed a steady decline in the number of nests laid and in frequency of occurrence of *arribada* events at Nancite beach. There was a sharp decline during 1983 and consecutive poor nesting periods during 1987-96. Whereas nesting during any one year may be affected by environmental factors such as El Niño-Southern Oscillation events, the authors suggest that low hatching rates recorded at this beach may play a significant role in determining the long-term decline of the nesting effort of the Nancite assemblage.

ALARM RESPONSES IN TADPOLES

M. R. Summey and A. Mathis [1998, Herpetologica 54(3): 402-408] note that larvae of several species of anurans have been shown to exhibit flight responses to chemical stimuli from injured conspecifics, but that the presence of this chemical alarm system is not ubiquitous for the order. They tested three species of Neotropical tadpoles (*Bufo marinus*, *Rana brownorum* and *Smilisca cyanosticta*) for an alarm response to extracts from injured conspecifics. Tadpoles of *Bufo marinus* decreased their activity in response to extracts from conspecifics but not to extracts from heterospecifics or to a blank control. Neither of the other species showed any differences in their responses to the three stimuli (conspecific extract versus heterospecific extract versus blank). To date, only a few species representing five families of anurans have been tested for responses to alarm pheromones. The authors believe that tests of a greater diversity of species may provide important insights into the evolution of alarm pheromones for anurans.

LOGGERHEAD PATERNITY

J. L. Bollmer et al. [1999, Copeia (2):475-478] used microsatellite DNA to determine paternity in loggerhead sea turtle (*Caretta caretta*) clutches. Hatchlings from three clutches were genotyped at two loci, as were their mothers and a sample of adults. A maximum-likelihood analysis determined the most likely number of fathers represented in each clutch using the genotypes and population allele frequencies. The analysis concluded that only one of the three clutches was sired by multiple males, with two fathers being more likely than three.

EVOLUTION OF VIVIPARITY IN *SCELOPORUS*

F. R. Méndez-de la Cruz et al. [1998, *Herpetologica* 54(4): 521-532] note that according to the cold-climate model, viviparity in squamate reptiles evolves at high elevations and latitudes. The lizard genus *Sceloporus* has been used to support this model; viviparous species are found at higher elevations than oviparous species. For example, in the *scularis* species group, a viviparous species replaces its oviparous sister species at elevations above 3000 m. The authors used recent literature to evaluate four aspects of the evolution of viviparity within the genus and concluded that: (1) viviparity has evolved a minimum of four times within the genus. (2) Viviparity has not evolved at high latitudes, because the oviparous species found at high latitudes lack the morphological and physiological features that facilitate prolonged egg retention, the intermediate stage between oviparity and viviparity. (3) Viviparous species have not invaded high latitudes because viviparity in *Sceloporus* is associated with gestation during winter months. This is a viable reproductive mode at high elevations at tropical latitudes, because ambient temperatures during the winter are similar to those in the summer. At high latitudes, in contrast, winters may be too cold to support embryogenesis, or perhaps even survival of embryos, (4) Viviparity evolved from oviparity through three major transitions. The first was the evolution of viviparity from oviparity; this transition was associated with the invasion of high elevations. The second transition was a shift from summer to winter gestation such that birth was shifted from autumn to spring. With birth in the spring, neonates are able to mature by autumn, and consequently they can produce a litter within a year of their own birth. The third transition was a shift from asynchronous reproductive cycles of males and females (mating in spring and fertilization in autumn) to synchronous reproductive cycles (mating and fertilization in the autumn).

FRILLNECK LIZARD BEHAVIOR

K. A. Christian et al. [1999, *J. Herpetology* 33(1):12-17] observed adult-like display behavior in newly hatched frillneck lizards, *Chlamydosaurus kingii*, including head waving and erection of the frill. Hatchlings were placed together in groups of four for a week at a time and a measure of dominance was scored with respect to gaining access to a basking site. In most cases, the hatchlings were ordered non-randomly with respect to the optimum basking site, suggesting a hierarchy among the lizards. Plasma androgen concentrations were measured in hatchlings and lizards of both sexes of age classes ranging from hatchlings to three or more years old. Hatchling dominance was not related to plasma androgen concentrations, sex, or body size, but there was a positive correlation between dominance and mass gained over the six weeks of observations. Plasma androgen concentrations were low in all age and sex groups except adult males three or more years old, although two-year-old males had slightly elevated concentrations. A few (8%) two-year-old males had scars, presumably from intraspecific fights, but many (46%) males three or more years old had scars. No females or males younger than two years old were scarred.

AURAL ESTIMATES OF POPULATION SIZE

D. A. Driscoll [1998, *J. Herpetology* 32(4):475-481] notes that the ability to estimate the size of populations is an integral part of species conservation. He investigated the utility of counts of calling males for the rapid and efficient assessment of population size in the endangered frogs *Geocrinia alba* and *G. vitellina* from southwestern Australia. Multiple censuses were used to examine the optimum time of night and season to conduct surveys. Turnover of calling males was measured using removal and mark-recapture studies. Males called persistently throughout the night, but the time of the annual peak in the number of calling males varied among sites. Turnover of males was very low, with the majority of males in each population (76-96%) calling simultaneously. Combining knowledge of the sex ratio with counts of calling males, it is then possible to obtain a good estimate of total population size.

SOUTH ASIAN REPTILE CHROMOSOME NUMBERS

I. Das and H. Ota [1998, *Hamadryad* 23(2):179-193] note that cytogenetic information in many cases offers clues to the detection of cryptic species overlooked by morphological taxonomists. The authors provide a listing of the chromosome numbers of 119 species of reptiles that occur in the south Asian region. The inventory includes three crocodiles, 13 turtles, 54 lizards and 49 snakes. This represents about one-fourth of the known species of the subcontinent.

NEW SNAKE FROM WESTERN CUBA

S. B. Hedges et al. [1999, *Copeia* (2):376-381] describe *Tropidophis celiae*, a new species from the northern coast of La Habana Province, western Cuba. It is tan and has two rows of prominent, dark brown dorsal spots and a pale neck band. It most closely resembles another species from western Cuba, *T. maculatus*, in having a high number of ventral scales and in being prominently spotted. It differs from that species and others in aspects of scalation and coloration.

REPRODUCTION IN AN ENDANGERED LIZARD

M. A. Rodríguez-Domínguez and M. Molina-Borja [1998, *J. Herpetology* 32(4):498-504] present data on the reproduction of the endangered Hierro giant lizard, *Gallotia simonyi machadoi* (endemic to El Hierro, one of the Canary Islands). The general sequence of the reproductive cycle and time intervals of the different phases are described, together with courting and mating behavior patterns. Behavior patterns prior to mating included male head bobs with an inflated throat. In two courtship sequences, males performed seven consecutive head bobs of almost constant duration. Sexual activity, including copulation, began during the first two weeks of May. Clutches were laid from the first week of June until the end of August. Mean clutch size was 8.6 (range 5-13 eggs). Significant relationships were found between clutch size and female snout-vent length (SVL), clutch weight (CW) and female SVL, and between CW and female body weight. Mean relative clutch mass was 0.25. Eggs began to hatch in the beginning of August; at 28-29°C the incubation time averaged 61 days. Biometric data are reported for 146 newborn lizards.

Letter from the President

Dear Members:

As I sit here at my computer, pondering on what to say, I cannot believe that we are six months into the year with a mere six months until Y2K. Aren't you all pretty tired of that phrase that pays? Yikes! I must say, as CHS President, I have found the last six months both exhilarating and exhausting! The zoo trip is two weeks away, and by the time you get your *Bulletin*, we will once again be discussing how great it was to see real live Komodo dragons! Or we may be discussing the video choices made for the bus trip! I promise no more movies with monkeys dressed as people!

I want to thank Dr. Cheryl Roge for conducting a most educational and fun parasitology class last Saturday at the Grove. We had a full class! We had some interesting "live" slides to view, thanks to all of those who attended and brought their poops. . . . Uh, their animal poops, that is! I would also like to thank Lauren Ottlinger and the Grove for allowing us to host the class at the center. The place looked fabulous! Try and get out there this summer with the kids! The resident alligator snapping turtle is a sight to behold!

I have been striving to keep my personal mission statement for the membership, "Interaction and the CHS", alive since becoming President. I think It's working. The Internet database membership network is growing and I love all the E-mail I get from everyone. It's a most effective way of communication among the membership, being able to send mini-announcements to those with E-mail. If you are not amongst the CHS Internet junkies, get on board by dropping me a post!

Once again, I feel we are truly of group of kindred spirits who love, admire and respect our animals. A perfect example comes from a recent loss to my collection. I had been feverishly working with Dr. Byron DeLaNavarre for the past month or so, trying to control and eradicate raging skin infections on two of my breeder female uromastyx. We lost. Ironically, in the same week, another egg-bound lizard died, in spite of heroic efforts to surgically remove the eggs (On Memorial Day, bless Byron). Those who know me knew just how devastating my loss was. I found great comfort from those who understood what I was going through. My fellow herpers. Not co-workers who did not understand the loss of a reptile ("Can't you just go buy another one at the petstore?") This is why groups like the CHS and my wonderful internet family of urophiles on my listserv are so great. We connect and understand the passion. We may disagree about many things, herp related or otherwise, but we all connect at a great depth when it comes to the creatures we live with. I just wanted to share my plight with you.

So, friends I'll sign off with a quote from an unknown author.

"Never underestimate the intelligence of the creature staring back at you from behind the glass"

See you in July!

Audrey Vanderlinden
Uromastica@aol.com

FUTURE BOARD MEETINGS

The dates for the next two meetings of the Board of Directors of the Chicago Herpetological Society are July 16 and August 13. Meetings are generally held at 7:30 P.M. in the Administration Building of the North Park Village complex, 5801 N. Pulaski in Chicago. For more information and to verify the dates and location, please contact Audrey Vanderlinden at (773) 836-2477 or E-mail <uromastica@aol.com>.

MOVING??

Please let us know in plenty of time of any change in your mailing address. The *Bulletin of the Chicago Herpetological Society* is sent to our U.S. members by bulk-rate third class mail. This means that the U.S. Post Office will not forward your *Bulletin* with the rest of your mail. This is so even if you make a special request that your magazines be forwarded (such a request only applies to second class mail).

Unofficial Minutes of the CHS Board Meeting, May 14, 1999

The meeting was called to order at 7:42 P.M. Board members Greg Brim, Jennie Picciola and Don Wheeler.

Officers' and Committee Reports

The minutes of the April Board of Directors meeting were read, corrected and accepted.

The Treasurer's report was read and accepted.

Membership stands at approximately 875 but there's an additional 20 sign-ups from ReptileFest. Mike Dloogatch suggested sending out renewal notices earlier.

Audrey Vanderlinden reported that the bus for the Louisville Zoo trip on June 19 is half full. The parasitology class is just about full. A future workshop with Dr. Byron de la Navarre is under consideration. Audrey is also preparing to appoint a nominating committee for the November elections.

ReptileFest: The 'fest was successful, despite the good weather working against high attendance at an indoor event. One of the best results was that Paul Sereno thought so highly of ReptileFest that he plans to return next year. Attendance surveys showed a higher proportion of children on Sunday. Lori King-Nava felt that three potential advertising areas to work on for next year are schools, veterinarians and the Internet. There is also a great potential for field trips to ReptileFest. Lori received postcards from Ellin Beltz and Karen Bell, both of whom gave ReptileFest rave reviews.

Grants Committee: A committee meeting to decide on grants recipients for 1999 will take place at Mike Dloogatch's office on May 16.

Old Business

Jack Schoenfelder sent word that he has completed and filed the CHS federal tax form for 1998. Because of our lower revenue, he was able to use the EZ form.

New Business

Audrey Vanderlinden has accepted the resignation of Lisa Koester from the office of Publications Secretary. There is a possibility that the office will remain vacant. Lisa will continue to prepare the handouts at the monthly meetings.

A CHS member in Albuquerque has written a letter expressing interest in acquiring videotapes of the programs at our general meetings.

Audrey Vanderlinden, Gary Fogel, Mike Dloogatch and Gino Martinez received a tour of the new Chicago Academy of Sciences Nature Museum from Kathleen Berg, the CAS Marketing Director. They discussed the possibility of the CHS getting table space at the October opening day festivities. They also discussed our desire to hold our monthly meetings at the new facility. Lori King-Nava suggested that a formal presentation be made to the Academy.

Round Table

Gino Martinez thanked Diane Fligiel for helping with his ailing computer.

Lori said that a woman approached the Iguana Squad at ReptileFest and wanted to film them and put a song to it. This video would be featured on the Bozo show. The issue of a copyright for the "Iguana Squad" concept was then discussed.

Mike Dloogatch reported that earlier in the day he had assisted Ron Humbert by serving as a proctor at the National Science Olympiad at the Field Museum. The junior high and high schoolers did very well on some very tough questions.

Steve Spitzer said it felt good to be the ex-president observing the new president and her many new ideas.

The meeting adjourned at 9:08 P.M.

Respectfully submitted by Recording Secretary Karen Bielski

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Attention: New regional herpetological study group affiliate to form. The formation of a Redwood Region Herpetological Affiliate (Society) is proposed by local area herpetologists. Anyone interested in the herpetological taxa inhabiting the Redwood Coastal Belt of the northern Pacific coastal regions of North America is cordially invited to join. A formational meeting is proposed to be conducted at the Humboldt State University campus, Arcata, California, in June 1999. Please contact Bradford Norman through: BRN, c/o Redwood Region Herpetological Affiliate (Society), 69 Midway Court, Arcata CA 95521, or call (707) 445-8252 or (707) 442-5977.

For sale: rats and mice—pinkies, fuzzies and adults. Quantity discounts. Please send a SASE for pricelist or call Bill Brant, *THE GOURMET RODENT*, 6115 SW 137th Avenue, Archer FL 32618, (352) 495-9024, E-mail <GrmtRodent@aol.com>.

For sale: murine-pathogen-free rats and mice available in all sizes, live or frozen: pinkies, fuzzies, crawlers, small, medium and large. Frozen crawler mice in lots of 2000, \$.17 each. Also available, full grown hairless mice. FOB shipping point. Master Card accepted. Call (518) 537-2000 between 8:00 A.M. and 5:00 P.M. or write SAS Corporation, 273 Hover Avenue, Germantown NY 12526 for prices and additional information.

For sale: from **The Mouse Factory**, producing superior quality, frozen feeder mice and rats. New prices, new sizes, and now rats! Our mice and rats are vacuum-packed to greatly extend freezer life by reducing freezer burning and preserving vitamin and nutrient content. We feed our colony a nutritionally balanced diet of rodent chow, formulated especially for us, and four types of natural whole grains and seeds. Mice: pinkies, \$.25; fuzzies, \$.30; hoppers, \$.35; weanling, \$.40; adult, \$.45. Rats: starting with pinks at \$.40 each, to XL at \$1.80 each. Discount prices available. We accept Visa, MC, Discover or money orders. P.O. Box 85, Alpine TX 79831. Call us toll-free at (800) 720-0076 or visit our web site <www.themousefactory.com>.

For sale: from Bayou Rodents, excellent quality feeder mice and rats. Every size available. Pinks starting at \$20/100. Orders are shipped by overnight service Monday thru Thursday. We accept Visa, MasterCard and Discover. For more info, contact Rhonda or Peggy, (800) 722-6102.

For sale: **high quality frozen feeders.** Over a decade of production and supply. Seven sizes of mice available: small newborn pinks up to jumbo adults. Prices start at \$25 per 100. Feeders are separate in the resealable bag, not frozen together. Low shipping rates. Free price list. Kelly Haller, 4236 SE 25th Street, Topeka KS 66605, (913) 234-3358 evenings and weekends.

For sale: Herp bags—colors vary, translucent ripcord nylon, super lightweight, extremely durable construction with hot corners sewn in, double seamed. Custom sizes made upon request. Sizes: 46" × 14", \$7 each; 24" × 12", \$6 each; 24" × 6", \$5 each. Shipping fees, \$1 for first bag, \$.30 each additional bag. Nicole Lechowicz, 2511 S. Illinois Avenue, #104, Carbondale IL 62901, (618) 457-2783.

For sale: stainless steel "pinkie pump," all parts included; and new HabiStat dimming thermostat with nighttime temperature drop function, designed for use with light bulbs and other heaters. \$60 takes both. Shawn Bjerke, P.O. Box 5818, Fargo, ND 58105, (701) 235-7263. E-mail: <sbjerke@mail.ff.cc.mn.us>.

For sale: *A Life History Study of the Gray-banded Kingsnake* *Lampropeltis mexicana alterna* in Texas by Dennis Miller, 1979, several b&w photos, wealth of info, \$40 + postage; *Rattlesnakes—Their Habits, Life Histories, and Influence on Mankind*, 2 vols, 1956, good condition, jacket torn, \$300 + postage; sets of *Reptile and Amphibian Magazine*, six issues per year, good condition, \$25 + postage **per set**. Years: '91–'97. Tom, (602) 967-6265. [AZ]

For sale: Collection of herp books including some rare/hard to find titles. Send E-mail or stamp for list. Shawn Bjerke, P.O. Box 5818, Fargo ND 58105. E-mail: <sbjerke@mail.ff.cc.mn.us>.

For sale: Captive Breeding Magazine, (Vol.1, Nos.1–4; Vol.2, Nos.1–4; Vol.3, Nos.1–2), 1992–1995. All in mint condition. Will sell for best offer over \$70. Shawn Bjerke, P.O. Box 5818, Fargo, ND 58105. E-mail: <sbjerke@mail.ff.cc.mn.us>.

For sale: Two large male red-footed tortoises, both approx. 13", long-term captives, excellent health, \$225 each or both for \$400. Also, two wooden cages (their winter homes), exterior dimensions 60" × 24" × 21", glass sliding doors, 48" interior Vita-lite, heating pad, \$50 each, will not sell either before the tortoises. John Jr., (708) 857-7929.

For sale: yearling argus monitor, \$175; albino eastern kingsnake (*Lampropeltis g. getula*), \$300; yearling black-tailed cribo, \$200; young, red, Colombian boa, \$50; assorted sizes, colors, sexes Mali uromastix, LTC, \$60–75; yearling Moroccan uromastix, \$125; LTC male chuckwalla, \$60; two adult male locality rosy boas, \$50 and \$75. Mike Malawy, (630) 717-9955 evenings and weekends, E-mail: <mike@herpworld.com>.

For sale: high quality c.b. Suriname, Peruvian and Guyana redtail boas; electric jungle and Irian Jaya carpet pythons; *Lampropeltis pyromelana knoblochi*.

When only the best will do! Bob, (847) 632-1055.

For sale: male Irian Jaya carpet python, 3 years old, \$250; male coastal carpet python, 3 years old, \$200; pair of Dumeril's boas, \$400/pair; female Haitian boa, 4 years old, \$250; male Brazilian rainbow boa, 3 years old, \$200. Baby snakes—jungle carpet pythons, \$175 each; coastal carpet pythons, \$100 each; Brazilian rainbow boas, \$100 each. The Snake Lady, (630) 851-2331 phone, (630) 851-9672 fax.

For sale: **Black-headed pythons**, c.h. 10 April 1999 from beautifully patterned adults produced at the San Diego Zoo in 1992. Pairs and one trio available. Eric R. Skov, HC 60 Box 175, Wells NV 89835, (775) 752-3909 telephone, or (775) 752-3643 fax.

For sale: Timor Island Macklot's pythons (*Liasis mackloti*), c.b. '99, the parental stock are unrelated and from known localities on Timor Island, parents are big (10–12') and are highly iridescent, high freckling pattern with an infusion of butter yellow, adults are very gentle animals, \$100 ea. or \$180/pair; Roti Island Macklot's pythons (*Liasis mackloti*), c.b. '99, the parental stock are unrelated and from known localities on Roti Island, smaller than Timor, have less freckling but more intense yellow on ventor and head/chin area, adults are also very gentle, \$100 ea. or \$180/pair; Sarawak "Borneo" short-tailed pythons (*Python curtus breitensteini*), c.b. '99, parental stock are from unrelated and from a NEW population in Sarawak (a Malaysian state in northwestern Borneo), unusual morph of the Borneos and uncommon in collections, adults are very gentle with superb coloration and patterns, \$110 ea. or \$200/pair, ball pythons (*Python regius*), c.b. '99, great pets, will be well started on dead mice, \$40 ea.; lavender phase albino California kingsnakes, c.b. '99, beautiful snakes that make great pets, from very stunning and mellow parents, \$40 ea. or \$75/pair; leopard geckos (*Eublepharis macularius*), c.b. '99, **hi-yellow**, from zoo stock, great lizard pets, \$10 ea. Due in mid June—"golden" phase Colombian boas, from Steve Snow/Exceptional Exotics stock, mother is **bright pink** from head to tail and male has lots of nice gold hues, \$50–150, depends on color. Call to be put on reservation list, Rob Carmichael, (847) 615-4388, or E-mail at: <Carmichr@citylf.lfc.edu>. Part of the proceeds will be donated to the Wildlife Discovery Center operated by the Lake Forest Recreation Department.

For sale: 16" female variable kingsnake, *Lampropeltis mexicana thayeri*, c.h. '97, buckskin; 26" male variable kingsnake, c.h. '96, outstanding red, black, olive; 28" male Pueblan milksnake, c.h. '96, good color. \$100 for the trio. Shawn Bjerke, P.O. Box 5818, Fargo, ND 58105, (701) 235-7263. E-mail: <sbjerke@mail.ff.cc.mn.us>.

Advertisements (cont'd)

For sale: c.b. **Vietnamese blue beauties**, unrelated bloodlines, \$500/pair; c.b. **Amazon tree boas**, \$50–200; **Sawu pythons**, adult pair, \$450. Mike, (708) 385-0543. Chicagoland area. E-mail: <Boakingdom@aol.com>.

For sale: '99 c.b. hatchling Yunnan beauty snakes, \$50; eastern milks, \$10. Leopard geckos and bearded dragons expected soon. Henry Cohen, 24 St. Johns Place, Buffalo NY 14201, (716) 881-6724.

For sale: 1999 hatchlings—aberrant Cal. kings, \$20–40 each; wide-ringed Pueblan milks, \$40–75 each; zigzag Okeetee corns, \$30–50 each; Okeetee corns, hetero for hypo and zigzag, \$40 each; motley corns—amelanistic, anerythristic, heteros for both, striped—amelanistic and regular, cube corns—heteros for all, \$25–75 each. Please call Joe at (708) 450-1614.

For sale: two hybrid (Cal. × eastern) kingsnakes, aggressive, \$20 each. Steve, (773) 728-0824.

For sale: Hatchling California kingsnakes, \$15 each. R&D Exotics, (708) 485-5705.

For sale: now incubating eggs of the following: northern pine snakes (*Pituophis m. melanoleucus*), north Jersey stock, unrelated to any other captive stock, \$120/pair, Alabama/New Jersey stock, \$90/pair; bullsnares (*P. m. sayi*), Kankakee, \$40/pair, Colorado, \$50/pair, Canadian, \$60/pair; corn snakes (*Elaphe g. guttata*), handsome Delaware stock, \$35/pair; plains hognose snakes (*Heterodon n. nasicus*), Canadian stock, \$130/pair [permit needed in IL]. Deposits now being accepted, supplies limited, permits where necessary. Bart Bruno, (203) 773-9257, evenings and weekends. [CT]

For sale: Now accepting reservations for the following 1999 expected offspring. **Snow plains garter** (*Thamnophis radix*), this will be the first year that these are produced and will be very limited numbers, \$225–300 each; **double hetero plains garter** (anerythristic × albino), statistically offspring will include albino, anerythristic, snow, heteros and normals, \$175 each; **anerythristic plains garter**, dark black with gray dorsal stripe and blue venter (two possible bloodlines), \$100–125 each; **albino plains garter**, classic lavender/white, similar to California king, \$125–150 each; **possible hetero plains**, these will be offspring of the albino × anerythristic cross, possibly hetero for albino, anerythristic and snow, \$30 each; **Blais red eastern garter** (*T. s. sirtalis*), photos in *Vivarium*, Vol. 9, No. 6, pp. 12-13, these are gorgeous, varying degrees of high red markings and sure to be popular, \$50–125 each; **double hetero Blais red eastern × albino Florida**, this will produce a stunning, robust red albino and will be extremely popular for years to come, \$95 each; **melanistic eastern garter**, classic midnight black with white chin, copy of permit provided upon request, \$25 each; **hetero anerythristic red-sided** (*T. s. parietalis*), exciting, one-of-a-kind new morph, charcoal black with gray dorsal stripe and white fleckings throughout body, \$100 each. **All of my garter snakes eat mice and it is generally easy to convert babies to rodents.** For reservations, contact Scott Felzer, (919) 934-0110 Eastern Time or E-mail: <sirtalis01@aol.com>. [NC]

For sale: **1999 prospective hatchlings**: Baird's ratsnakes, \$15 each; prairie kingsnakes, \$15 each; California kingsnakes, \$20 each; speckled kingsnakes, \$15 each; albino speckled kingsnakes, \$25 each; Mexican black kingsnakes, \$30 each; red milksnakes, \$30 each; Sinaloan milksnakes, \$35 each; Pueblan milksnakes, \$35 each; Mexican milksnakes, \$40 each; Queretaro or Ruthven's kingsnakes, \$50 each; Nuevo León kingsnakes (*thayeri*), \$65 each; gray-banded kingsnakes, \$50 each; Durango mountain kingsnakes (*greeri*), \$75 each; Arizona mountain kingsnakes, \$125 each; prairie/speckled crosses, \$20 each. **Breeders, available May–June**: one male and one female Baird's ratsnakes, \$100; one male and one female *annulata*, \$200; one male and two female prairie kings, \$135; one male and one female albino speckled kings, \$150; one male and one female Mexican black kings, \$175; one male and three female red milksnakes, \$250; two female Sinaloan milksnakes, \$175; one male and two female Pueblan milksnakes, \$250; one male and one female Ruthven's kingsnakes, \$250; one male and one female Nuevo León kingsnakes (*thayeri*), \$250; one male and two female Durango mountain kingsnakes, \$300; one male and one female *mexicana mexicana*, \$135; two male and two female prairie/speckled crosses, \$85/pair; one male and two female California kings, \$150. Steve Mitchener, (405) 748-6566 after 6:00 P.M. Central Time. [OK]

For sale: Great snakes, great service. Send SASE for list. Applegate, P.O. Box 338, Campo CA 91906, (619) 478-5123. E-mail: <applesnake@juno.com>. Website: <www.applegatereptiles.com> Thank you, call me.

For sale: **Adults**: male het ghost, \$60; black king, \$55; male *thayeri* (milksnake phase), \$100; pair of ball pythons, \$175/pair; Indonesian bluetongue, \$55; *Rhacodactylus auriculatus*, c.b. '98, \$150; *Phelsuma madagascariensis grandis*, c.b. '98, \$20. Flexwatt heat tape, \$2.50/ft, \$5 each connection. Steve Bostwick (515) 274-4580, E-mail <liasis@juno.com>. [IA]

For sale: jungle carpet pythons. 4½–5' male, great feeder, jet black and bright yellow, proven breeder, \$350; 3', 2-year-old male, "Lazik" bloodline, awesome color, \$250; 8-month-old female, choice, held back from last year, perfect specimen, vertebral stripe, great eater, \$175. Mark Petros, Strictly Serpents, (847) 854-3259 home, (847) 854-2992 work.

For sale: Send SASE to CRC, P.O. Box 0731, Las Vegas NV 89125-0731 for brochures and list of species available. Limited bookings available for guided tours of herpetological collection sites in Nevada. Call/fax (702) 450-0065. URL <http://www.herp.com/crc/> E-mail <crsafety@aol.com>.

Tours: Adventure tours to Madagascar! Join **Bill Love** seeing and photographing fauna and flora, heavily herp-biased, across the world's least known mini-continent. Maximum fun & photo ops assured on every trip. Contact him at: BLUE CHAMELEON VENTURES, P.O. Box 643, Alva FL 33920. TEL: (941) 728-2390, FAX: (941) 728-3276, E-MAIL: <blove@cyberstreet.com>.

Tours: **Road-riding in Costa Rica!** Treat yourself to the trip of a lifetime! Learn about tropical herps, find them, photograph them, see where they live. **Greentracks, Inc.**, offers the best herpetological tours led by internationally acclaimed herpetologists and herpetoculturists. See the Amazon, visit cloud forests, experience the world's greatest rainforest, super sunsets and good company. Call (800) 9-MONKEY.

Wanted: Large cage, big enough for a large Burmese python. Prefer Neodesha but will consider others. Please call Wildlife Educators and ask for Peter, (815) 795-3959.

Wanted: Any information about flying snakes (*Chrysopelea*), including natural history, care and anecdotes. I'm conducting research on their flight at the University of Chicago. Jake Socha, (773) 324-4010, E-mail: <jjsocha@midway.uchicago.edu>.

Wanted: aberrant/unusual garter snakes. Scott Felzer, (919) 934-0110. [NC]

Wanted: big-headed turtles; mata mata turtles; Mexican giant mud turtles (*Staurotypus triporcatus*); exceptionally large common snappers (45 lbs. & up); large alligator snappers (over 90 lbs.); spectacled caiman from Trinidad, Tobago and Surinam; dwarf caiman; smooth-fronted caiman; albino turtles (except red-eared sliders). Walt Loose, (610) 926-6028, 9:00 A.M. – 1:00 P.M. or after 11:30 P.M. Eastern Time.

Line ads in this publication are run free for CHS members — \$2 per line for nonmembers. Any ad may be refused at the discretion of the Editor. Submit ads to: Michael Dloogatch, 6048 N. Lawndale Avenue, Chicago IL 60659, (773) 588-0728 evening telephone, (312) 782-2868 fax, E-mail <MADadder0@aol.com>.

HERP-ACROSTIC #16 by Mike Dloogatch

1 U	2 J	3 X	4 Q	5 T	6 E	7 P	8 M		9 O	10 B	11 R	12 S		13 H	14 M	15 B		16 D	17 A	18 C	19 S	20 O		21 B
22 G	23 F		24 V	25 T	26 O		27 D	28 V	29 W	30 O	31 U	32 K		33 Y	34 N	35 U	36 I	37 T	38 L		39 C	40 X	41 E	42 A
43 N	44 J	45 O	46 V		47 B	48 R	49 D	50 C	51 G	52 U	53 S	54 M	55 Y		56 A	57 Q	58 F	59 T	60 K	61 R	62 L	63 N	64 U	
65 B	66 T	67 R		68 J	69 Y	70 Q		71 U	72 P	73 A	74 G		75 V	76 D	77 N	78 P	79 H	80 E	81 T	82 C	83 W		84 G	85 R
86 O	87 V	88 L	89 I		90 F	91 R		92 X	93 M		94 S	95 M	96 B	97 I	98 W	99 Q		100 D	101 T	102 Y		103 W	104 C	105 L
106 V	107 E	108 I	109 R		110 S	111 T	112 N	113 X	114 H	115 F		116 M	117 R	118 Q	119 D		120 F	121 H	122 C	123 A	124 G	125 L		126 B
127 J	128 Q		129 B	130 T	131 A	132 D		133 L	134 V	135 N	136 H	137 B	138 U	139 E		140 D	141 K	142 N		143 A	144 L	145 G	146 B	
147 Y	148 J	149 W	150 T	151 O	152 P	153 X	154 U		155 T	156 G	157 D	158 R	159 Y		160 T	161 J	162 B	163 I		164 F	165 D	166 V	167 S	—
168 M	169 P	170 K	171 C	172 R		173 B	174 E	175 Q	176 L	177 W	178 V	179 J		180 O	181 D		182 N	183 F	184 U	185 I	186 W	187 G	188 Y	189 H
	190 T	191 B	192 M	193 E	194 R	195 X		196 V	197 C	198 F	199 I	200 E	201 O	202 Q	203 J		204 M	205 V	206 X	207 T	208 C	209 W		210 P
211 D	212 I	213 L		214 A	215 U	216 B		217 T	218 B	219 K	220 V	221 L	222 F		223 D	224 O	225 N	226 R						

How to solve this puzzle: The diagram, when filled in, will contain a quotation from a published work on herpetology. The numbered squares in the diagram correspond to the numbered blanks under the WORDS. The letter at the upper right of each square indicates the WORD containing the letter to be entered in that square. The WORDS form an acrostic: taking the first letter of each in order spells out the name of the author and the title of the work from which the quotation is taken.

CLUES	WORDS
A. A component of this snake’s venom inspired the high blood pressure drug, captopril.	143 17 73 42 131 214 56 123
B. First director of the Antivenom Institute of America.	126 21 173 191 146 162 218 216 15 137 129 10 96 65 47
C. State in which one might expect to find <i>Spea multiplicata</i> (two words).	82 208 171 18 50 122 104 39 197
D. Tortoise plant (hyphenated).	132 119 165 76 27 140 16 49 181 223 211 157 100
E. _____ skink, <i>Lampropholis delicata</i> .	41 174 200 6 193 80 107 139
F. Snakeweed; bistort.	58 222 90 115 23 164 183 198 120
G. Adjective for <i>Nerodia sipedon</i> or <i>Rana pipiens</i> .	187 22 156 84 145 74 51 124
H. Publication of the International Society for the Study and Conservation of Amphibians.	79 114 189 13 121 136
I. Interglacial stage between the Illinoian and Wisconsin Glacial Stages.	163 212 108 97 36 185 89 199
J. Tied down.	148 44 68 161 2 127 179 203
K. Biblical pythoness: the witch of _____.	60 141 32 170 219
L. Like <i>Bufo punctatus</i> , for example (hyphenated).	105 221 38 125 133 144 176 88 62 213
M. <i>Eretmochelys imbricata</i> .	204 93 14 168 8 116 95 54 192
N. Like <i>Ceratophrys ornata</i> , for instance, in chromosome number.	135 182 112 63 77 43 225 34 142
O. _____ iguana, <i>Cyclura cornuta</i> .	224 9 180 30 45 151 26 86 201 20
P. Brand name for a line of reptile dietary supplements.	169 78 152 210 72 7
Q. Staglike.	70 118 202 175 57 4 99 128
R. Snake palm (two words).	67 194 11 48 61 109 158 85 172 226 117 91
S. Author of <i>A Field Guide to Reptiles and the Law</i> (last name only).	110 12 94 19 53 167
T. One of the retired Ty Beanie Babies (three words).	111 207 5 101 160 217 150 81 66 190 25 155 130 37 59
U. Author of <i>Breeding Terrarium Animals</i> (last name only).	35 138 71 184 31 154 1 52 64 215
V. Not allowing for compromise (hyphenated).	75 178 166 28 134 46 205 24 196 87 220 106
W. Another name for the hellbender (two words).	29 177 103 98 149 209 186 83
X. Situated on the right side of the body.	195 153 3 113 206 40 92
Y. Author of <i>Frankenstein</i> (last name only).	147 69 159 33 188 102 55

UPCOMING MEETINGS

The next meeting of the Chicago Herpetological Society will be held at 7:30 P.M., Wednesday, June 30, at the Field Museum of Natural History, Roosevelt Road at Lake Shore Drive, in Chicago. This will be our popular and always well-attended annual Show & Tell meeting. Bring an animal that you find interesting for one reason or another and be prepared to give a short (under five minutes) presentation to the group. Don't be shy. Age (yours) or commonness (the animal's) should not be a limitation. Guidelines for the occasion, based upon previous experiences: don't bring venomous reptiles or endangered species, and please bring only amphibians or reptiles (this means no worms, tarantulas or other invertebrates).

Speaking at the July 28 meeting will be **Dr. David Chiszar**, Professor of Psychology at the University of Colorado. Dr. Chiszar's program will cover his ongoing studies on the predatory behavior of viperid snakes. And as a bonus Dr. Chiszar will bring a display of coins that picture reptiles and amphibians.

We are required to use the entrance on the west side of the museum. **We are allowed to use the free parking lot to the west of the museum. Entrance to this lot is from McFetridge Drive, the wide street just to the south, between the museum and Soldier Field.** Public transportation is an option: the Roosevelt Road (12th Street) bus goes directly to the museum, thus providing a connection with the el and subway. This bus service runs until 11 P.M.

The Chicago Turtle Club

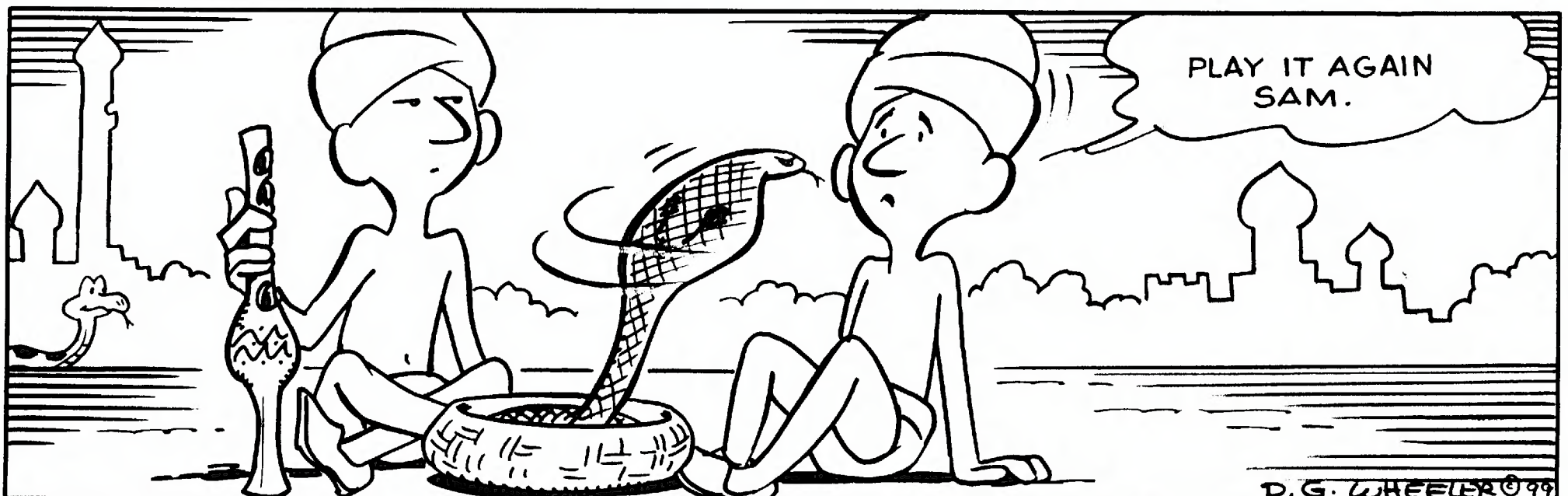
The Chicago Turtle Club will meet on Sunday, June 27, 1:00 – 3:30/4:00 P.M., at the North Park Village Nature Center, 5801 N. Pulaski, in Chicago. Meetings are informal. Questions, children and animals are welcome. Parking is free and there is no admission. For more information call Lisa, (773) 508-0034 or visit the CTC web site: <<http://www.geocities.com/~chicagoturtle>>.

1999 CHS GRANT AWARDS

The following CHS Herpetological Grants were awarded in 1999:

- **Allison J. Abell**, Indiana State University, "Assessing Environmental Risk of Agricultural Chemicals on Illinois Frogs." Awarded \$500.
- **Timothy R. Brophy**, George Mason University, "Variation and Systematics of Two Southeast Asian Batagurids (Testudines: Bataguridae), *Notochelys platynota* and *Malayemys subtrijuga*." Awarded \$250.
- **Mary Katherine Colbert**, Sunol-Ohlone Regional Wilderness, Sunol CA, "Rattlesnake Conservation: Using Natural History to Shape Education and Management Practices in a Regional Park." Awarded \$250.
- **Daniel D. Fogell**, University of Nebraska at Omaha, "Migration Patterns, Habitat Usage, and Natural History of the Timber Rattlesnake (*Crotalus horridus*) in Southeastern Nebraska." Awarded \$250.
- **Gordon R. Thurow**, Western Illinois University, "Field Studies on Appalachian *Plethodon* Populations." Awarded \$250.
- **Daniel A. Warner**, Virginia Polytechnic Institute and State University, "The Influence of Incubation Conditions on the Fitness of Hatchling Lizards." Awarded \$250.
- **Robert T. Zappalorti**, Herpetological Associates, Inc., Beachwood NJ, "Collection of Blood and Tissue Samples for DNA Analysis of Bog Turtle Populations." Awarded \$250.

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